Approved for public release. Distribution is unlimited. The views expressed in this document are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government. NMCPHC-EDC-TR-222-2017.

Annual Surveillance Summary: Bacterial Infections in the Military Health System (MHS), 2015

The Hospital Associated Infections and Patient Safety Division of the EpiData Center (EDC) performs ongoing, comprehensive surveillance of bacterial infections considered urgent, serious, and concerning threats as recommended by the Centers for Disease Control and Prevention (CDC) within the Military Health System (MHS). This brief summarizes incidence rates (IRs), subpopulation impacts, prescription practices, and antimicrobial resistance for the following infections among MHS beneficiaries for calendar year (CY) 2015:

- *Acinetobacter* species
- *Clostridium difficile*
- *Escherichia coli*
- *Klebsiella* species
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- *Pseudomonas aeruginosa*
- Vancomycin-resistant Enterococci (VRE)

Note: To review the complete annual report for each organism listed above, including a detailed presentation of definitions, methods, results, and important considerations, visit http://www.med.navy.mil/sites/nmcphc/epi-data-center/pages/2015-surveillance-summaries.aspx.

Summary of Results

The following tables summarize activity identified for the bacterial infections evaluated among MHS beneficiaries in CY 2015 as compared to weighted historic baseline data from CY 2012-2014.

Table 1. Incidence Rate (IR) and Trends of Selected Infections Among MHS Beneficiaries, CY 2015

Organism	2015 IR	Weighted Historic[a] IR 2012-2014	Two Standard Deviations: Weighted Historic IR	2015	
				Direction	Percent Change[b]
Acinetobacter spp.[c]	5.63	5.08	0.28	↑	10.9
C. difficile	20.8	16.1	5.9	↑	29.4
E. coli	702.3	592.2	157.4	↑	18.6
Klebsiella spp.	100.8	80.9	22.2	↑	24.6
MRSA	61.1	68.2	16.0	↓	10.4
P. aeruginosa	32.6	28.7	5.2	↑	13.6
VRE[c]	1.60	1.34	0.32	↑	19.4

Rates are presented as the rate per 100,000 persons per year.
A green arrow indicates an increasing percent change and a blue arrow indicates a decreasing percent change.
[a] Historic IR reflects the weighted average of the three years prior to the analysis year.
[b] This reflects the percent change from the weighted historic IR to the IR of the current analysis year.
[c] Results are presented by two decimal places to account for low incidence rates.
Data Source: NMCPHC HL7-formatted CHCS microbiology and M2 databases.
Prepared by the EpiData Center Department, Navy and Marine Corps Public Health Center, on 24 March 2017.

Table 2. Infection Impact: Demographics, Resistance, Prescription Practices, and Infection Setting within the MHS, CY 2015

Organism	Demographics Most Impacted: - Age (in Years) - Geographic Region - Beneficiary Type	Multidrug-Resistance IR[a] and Epi Trend		Prescription Practices and Antibiogram: - Most Frequently Prescribed Drug - Percent Susceptibility	Proportion of Healthcare- (HA) and Community-Associated (CA) Cases
Acinetobacter spp.	18-24 OCONUS Active Duty	0.3	↑	Trimethoprim/sulfamethoxazole 88.2%	HA – 35.0% CA – 65.0%
C. difficile[b]	65+ South Family Members	--	--	Metronidazole (Not applicable)	HA – 18.3% CA – 77.5% Indeterminate – 4.2%
E. coli	18-24 OCONUS Active Duty	126.9	↑	Nitrofurantoin 97.0%	HA – 15.0% CA – 85.0%
Klebsiella spp.	No significant age or beneficiary type. West, South, South Atlantic	6.7	↑	Ciprofloxacin 97.5%	HA – 27.4% CA – 72.6%
MRSA[c]	18-24 South Active Duty	15.2	↑	Trimethoprim/sulfamethoxazole 97.2%	HA – 25.0% CA – 75.0%
P. aeruginosa	65+ South Retired	1.9	↑	Ciprofloxacin 87.5%	HA – 47.0% CA – 53.0%
VRE[b]	65+ West Retired	--	--	Daptomycin 98.0%	HA – 81.9% CA – 18.1%

A green arrow indicates an increasing percent change and a blue arrow indicates a decreasing percent change.
[a] Multidrug-resistance incidence rate (MDR IR). Rates are presented as the rate per 100,000 persons per year.
[b] MDR IRs were not calculated for *C. difficile* or VRE infections.
[c] For MRSA only, the MDR IR column depicts the percentage of MRSA infections with inducible clindamycin resistance within the MHS and not the MDR IR.
Data Source: NMCPHC HL7-formatted CHCS microbiology and M2 databases.
Prepared by the EpiData Center Department, Navy and Marine Corps Public Health Center, on 24 March 2017.

Conclusion

Bacterial activity of interest in the MHS in 2015 exhibited expected trends and closely resembled activity in the general United States population as reported by the CDC and other public health agencies. No significant threat to mission readiness or population health was observed, and traditional treatment options remain viable. Continued adherence to infection control practices is recommended in the clinical, occupational, and deployed settings. Please refer to the complete suite of 2015 annual reports for important organism-specific considerations: http://www.med.navy.mil/sites/nmcphc/epi-data-center/Pages/2015-surveillance-summaries.aspx.

Point of Contact

Uzo Chukwuma
Division Officer, Hospital Associated Infections and Patient Safety
757-953-0970
usn.hampton-roads.navmcpubhlthcenpors.list.nmcphc-epi-plls@mail.mil

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Executive Service Directorate (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ORGANIZATION.

1. REPORT DATE (DD-MM-YYYY)	2. REPORT TYPE	3. DATES COVERED (From - To)
March 2017	Technical Report	01 January 2015 - 31 December 2015

4. TITLE AND SUBTITLE
Annual Surveillance Summary: Bacterial Infections in the Military Health System (MHS), 2015

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
Uzo Chukwuma

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
EpiData Center
Navy and Marine Corps Public Health Center
620 John Paul Jones Circle, Suite 1100
Portsmouth, VA 23708-2103

8. PERFORMING ORGANIZATION REPORT NUMBER
NMCPHC-EDC-TR-222-2017

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
EpiData Center
Navy and Marine Corps Public Health Center
620 John Paul Jones Circle, Suite 1100
Portsmouth, VA 23708-2103

10. SPONSOR/MONITOR'S ACRONYM(S)
EDC, NMCPHC

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
NMCPHC-EDC-TR-222-2017

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT
The Hospital Associated Infections and Patient Safety Division of the EpiData Center (EDC) at the Navy and Marine Corps Public Health Center (NMCPHC) performs ongoing, comprehensive surveillance of bacterial infections considered urgent, serious, and concerning threats per the Centers for Disease Control and Prevention (CDC). This brief summarizes incidence rates, subpopulation impacts, prescription practices, and antimicrobial resistance for the following infections among Military Health System (MHS) beneficiaries for calendar year 2015: Klebsiella species, Pseudomonas aeruginosa, Escherichia coli, methicillin-resistant Staphylococcus aureus (MRSA), vancomycin-resistant Enterococci (VRE), Clostridium difficile, and Acinetobacter species. Bacterial activity of interest in the MHS in 2015 exhibited expected trends and closely resembled activity in the general United States population as reported by the CDC and other public health agencies. No significant threat to mission readiness or population health was observed, and traditional treatment options remain viable. Continued adherence to infection control practices is advised.

15. SUBJECT TERMS
Health Level 7 (HL7), microbiology, surveillance, multi-drug resistance (MDR), Military Health System (MHS), methicillin-resistant Staphylococcus aureus (MRSA), inducible clindamycin resistance, Klebsiella species, Pseudomonas aeruginosa, Escherichia coli, vancomycin-resistant Enterococci (VRE), Clostridium difficile, Acinetobacter species

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Uzo Chukwuma MPH
U	U	U	UU	3	19b. TELEPHONE NUMBER (Include area code) 757-953-0970

Reset

Standard Form 298 (Rev. 8/98)
Prescribed by ANSI Std. Z39.18
Adobe Professional 7.0